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REMARKS

At page 5, last paragraph et seq., of the last office action the Examiner states:

"13. Applicant's arguments with respect to claims 1-3 and 5-11 have been considered but are moot in view of the new ground(s) of rejection."

"Applicant's amendment necessitated the new ground(s) of rejection presented in this office action."

Applicant respectfully traverses the erroneous allegations for purposes of petition to the Commissioner and for purposes of appeal.

The title of this application is a Coaxial Spindle Cutting Saw and has always been included in the preamble of all claims. The same identical elements of claim 1 as originally filed still comprise the only independent claim.

The Examiner for the first time cites four New references. Two of the New references are used as primary references!

The first primary reference Cromeens '513 is a wood gang saw with a telescoping arbor for sawing and edging lumber. As such it cannot be used for dicing semiconductor wafers.

The second primary reference against applicant's claim 1 is Reuter '749 and is entitled Tree-Trunk Sawing and Cutting Installation and each of two log sawing and cutting apparatus include one movable saw blade and a chipper head. As such the wood working apparatus cannot be used for dicing semiconductor wafers.

In the rejection statement, the Examiner alleges the wood saw blades are "dicing saw blades" and the chipper blades "are capable of dicing wafers and singulating wafers." The New grounds of rejection appear to be based on

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these and other entirely false and erroneous allegations and should be withdrawn!

The applicant is willing to file an affidavit to overcome the erroneous allegations noted hereinafter.

5 Claims 1 to 3 and 5 to 11 were presented for examination. Original claims 4 and 12 to 19 have been withdrawn under restriction actions.

10 New pages 6 and 11 are presented to correct the two spelling errors noted in paper No. 10 dated 26 January 2004.

Claims 1 to 3 and 5 to 11 were rejected under 35 U.S.C. 112(2) for lacking proper antecedent basis in independent claims 1 and 8. These objections are overcome in amended claims 1 and 8.

15 Claim 1 is rejected under 35 U.S.C. 102(b) as being fully anticipated by Cromeens 3,750,513. Applicant respectfully traverses this allegation which is based on erroneous allegations and the absence of teaching of elements of claim 1 as follows:

20 The Examiner alleges Cromeens '513 teaches a dicing or singulation saw. Cromeens states the saw is "a telescopic arbor assembly for a gang of ripping saws" --- for "lumber". This wood saw was never intended for dicing semiconductors and is incapable of being modified to saw wafers.

25 The Examiner alleges "Cromeens discloses a spindle housing 21; [and] a cutting saw 2;". Cromeens states base or frame 2 supports pulley or drive 21 which rotates head 27 and saws 7 to 10. The open arbor has no number or housing and the base 2 is never moved.

30 The Examiner alleges means 27 is a first axially movable mounting means. Cromeens states that the "fixed edger is mounted on a cup-shaped head ---" 27. Note that head 27 is fixed and not connected to the center spindle for

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positioning a first cutting [dicing] saw blade! A second edger 6 is mounted on axle 16 which is designed to be moved axially, however, it is not a dicing saw blade and the axle 16 has no means for moving it!

5 The Examiner alleges Cromeens discloses "second mounting means 23-26". Cromeens states "hubs 23-26 connect the saw blades 7-10 to the shafts 12-18 respectively", thus, the grounds for rejection is in error. The allegations that Cromeens "saw blades 7-11 are capable of dicing wafers and
10 singulating wafers" is also in error. Applicant explains in his specification the type of blades needed for singulation of substrates or dicing of wafers and wood saws are incapable of cutting wafers and substrates!

15 Cromeens does not show or describe a drive motor, but does show a pulley 21 which can only be driven by a belt.

20 Cromeens '513 does not show or describe spindle positioning means, however, such means are shown in Cromeens '244. The problem with the latter reference is that the arbor or center shaft does not move axially and therefore no saw blade is mounted on the center shaft 15!

Unlike Ono '540, applicant has coaxial spindles and only one housing and one drive for two blades. Ono has one motor for each blade.

25 Once Ono '540 is set-up the blades 186 do not move axially relative to each other. The blades are displaced basically in the same plane so that one blade cuts sequentially after the other.

30 While the two Cromeens references show adjustable wood saw blades, once they are set-up they are like Ono and do not move in operation when cutting.

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Applicant's coaxial spindles are in an axially movable housing and are moved together. In order to make this important feature more clear, the terms axial movement and axially movable have been added to claim 1 to more clearly distinguish over both Cromeens references as well as Ono, which is the best dicing saw reference. Applicant estimates his invention will result in about thirty percent higher output using only one housing instead of two.

Claim 1 as now amended is deemed allowable and the rejection under 35 U.S.C. 102(b) is clearly in error and should be withdrawn.

Dependent claim 8 is now properly dependent from claim 7.

Claims 2 to 3 and 5 to 11 are dependent from allowable claim 1 and a favorable action is requested.

Claims 1, 2, 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reuter '749 in view of Cromeens '513. Both teach wood saws for cutting logs into boards. However, Reuter employs knife heads 4 for making chips while sawing the log or board 1. To make large chips, as distinguished from saw dust, the chipper head 4 has horizontal knife teeth on the perimeter. A support sled 7 on guideway 8 allows the head 4 to be positioned during set-up to chip parts of the log. Saw blades 11 are positioned during set-up (before sawing) but have no way of holding the set positions. How this may be done is pure speculation.

The Examiner states sled 7 is a housing. This is not true. The Examiner erroneously states knife head 4 and saw blade 11 are coaxial saw blades. The knife head 4 cannot be a saw blade to be operable and it is run at a lower rotational speed; otherwise, chipper head 4 would be inoperable for its intended purpose.

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The Examiner admits that Reuter's outer spindle 5 does not rotate at the same speed as hollow shaft 10.

The Examiner alleges wood saw blades 11 and 12 are capable of dicing wafers which is wrong.

5 The Examiner alleges piston 22 can position hollow shaft 10. However, once set-up, the single blade 11 or 12 stays set for one log.

10 Cromeens '244 is only cited for the same rotational speed of the spindles. All other elements and functions of claim 1 should be shown in Reuter and Cromeens '513 which is not the case. This rejection should be withdrawn for the reason stated above.

15 Claim 1 calls for a second mounting means for positioning a second cutting saw blade on said outer hollow spindle. Reuter's cutting head 4 is fixed axially during operation. It is assumed that sled 7 can be moved during set-up but not during operation.

20 Claims 2, 10 and 11 are dependent from allowable claim 1 and provide distinctions not found in Reuter and/or Cromeens.

Claim 3 is rejected under 35 U.S.C. 103(a) on Reuter and Cromeens as applied to claim 1 above. Ono is added as a third reference for two spindle housings 134 and 136. Ono shows two saw blades on separate housings that can be independently pivoted to provide Z motion as shown in Fig. 3; however, as explained in Ono's text, blades 186 rotate counterclockwise, therefore, wafers are cut when the wafers move from right to left under the saw blade. A reverse movement would lift the wafer and tend to break it. The 25 blades cut sequentially and are fixed axially relative to each other. It would be impossible to modify Ono so that 30 two blades could dice a wafer at the same time. Claims 2

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and 3 call for four dicing saw blades which cannot be provided by Ono!

Claims 5, 6, 8 and 9 are rejected under 35 U.S.C.103(a) as rejected above on Reuter and Cromeens. A 5 third reference Kraft '910 is added to show one form of air bearing. Kraft shows six air bearing elements 21 for supporting a carriage 13. Each element 21 comprises at least six parts and there are at least six of these machined elements required.

10 Claim 5 is dependent from allowable claim 1 and provides an air bearing surface between an inner diameter of the outer hollow spindle and the outer diameter of the center spindle, thus, no elements like 21 are needed.

Claims 6 and 7 also eliminate element 21.

15 Claim 8 as amended is dependent from claims 7, 6, and 5 and adds a voice coil actuating arm as shown in Fig. 5B.

Claim 9 is dependent from claims 6 and 5 and adds an actuating arm and coupling means as shown in Fig. 9.

20 Clearly claims 5 to 9 are dependent from an allowable claim 1 and add novel structure which further distinguishes over the art cited.

The Examiner alleges that claim 7 is disclosed in the three references Reuter, Cromeens, and Kraft in further 25 view of Mueller et al. '127. Claim 7 is dependent from claims 6, 5 and allowable claim 1. Further, the fourth reference Mueller does not teach a voice coil on a spindle housing for positioning spindles!

Claim 4 was previously withdrawn. This dependent 30 claim was to be reinstated when its allowable generic claim 1 was allowed. Applicant requests reinstatement of claim 4 now that claim 1 is allowable for the reasons stated above.

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Claim 1 to 3 and 4 to 11 are now in this application ready for issue as enclosed with the status of all claims noted. A timely notice of allowance is now requested.

5 Marked up versions of pages 6 and 11 and claims 11 and 8 are also enclosed to show changes made.

Respectfully submitted,



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